REMARKS/ARGUMENT

The amendment responds to the December 5, 2002, Office Action pursuant to 37 C.F.R. § 1.111.

Claims 1 through 20, 22, and 25 through 50 are pending in the application. Claims 15, 31, and 39 are canceled and claims 1, 2, 6, 10, 14, 20, 22, and 47 are amended by this response.

1. Rejection of Claims 6, 22, 31, and 39 under 35 U.S.C. § 112, First Paragraph

The Examiner rejects claims 6, 22, 31, and 39 under 35 U.S.C. § 112, first paragraph, stating that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. The applicant traverses this rejection and requests reconsideration.

The Examiner states that the applicant has failed to define the phrase "high-level radiation" in claims 6 and 39. The applicant amends claim 6 and cancels claim 39 to overcome this rejection. The Examiner states that the applicant has failed to define the phrase "elements for technical applications" in claims 22 and 31. The applicant amends claim 22 and cancels claim 39 to overcome this rejection. This rejection is moot.

2. Rejection of Claims 6 and 39 under 35 U.S.C. § 112, Second Paragraph

The Examiner rejects claims 6 and 39 under 35 U.S.C. § 112, second paragraph, stating that the claims are indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The applicant traverses this rejection and requests reconsideration. The applicant amends claim 6 and cancels claim 39 to overcome this rejection. This rejection is moot.

3. Rejection of Claims 10 and 46 under 35 U.S.C. § 112, Second Paragraph

The Examiner rejects claims 10 and 46 under 35 U.S.C. § 112, second paragraph, stating that the claims are indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The applicant traverses this rejection and requests reconsideration. The applicant amends claim 10 to overcome this rejection. This rejection is moot.

4. Rejection of Claims 1 through 20, 22, and 25 through 50 under 35 U.S.C. § 112, Second Paragraph

The Examiner rejects claims 1 through 20, 22, and 25 through 50 under 35 U.S.C. § 112, second paragraph, stating that the claims fail to set forth the subject matter which the applicant regards as the invention. The applicant traverses this rejection and requests reconsideration. The applicant amends claims 1, 2, 6, 10, 14, 20, 22, and 47 and cancels claims 15, 31, and 39 to overcome this rejection. This rejection is moot.

5. Rejection of Claims 1 through 20, 22, and 25 through 50 under 35 U.S.C. § 112, First Paragraph

The Examiner rejects claims 1 through 20, 22, and 25 through 50 under 35 U.S.C. § 112, first paragraph, stating that the claims contain no limitation that the preform be crosslinked and that at least one reactant be at least trifunctional. The applicant traverses this rejection and requests reconsideration. The applicant amends claims 1, 2, 6, 10, 14, 20, 22, and 47 and cancels claims 15, 31, and 39 to overcome this rejection. This rejection is moot.

6. Rejection of Claim 47 under 35 U.S.C. § 112, First Paragraph

The Examiner rejects claim 47 under 35 U.S.C. § 112, first paragraph, stating that the claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it most near connected, to make and/or use the invention. The applicant traverses this rejection and requests reconsideration. The applicant amends claim 47 to overcome this rejection. This rejection is moot.

7. Objection to the Specification

The Examiner objects to the specification as failing to provide proper antecednt basis for the claims subject matter. The Examiner states that all limitations present within the claims must have antecedent support from the specification. The applicant amends claims 1, 2, 6, 10, 14, 20, 22, and 47 and cancels claims 15, 31, and 39 to overcome this objection.

8. Rejection of Claims 1, 2, 3, 5, 6, 7, 10, 13 through 17, 19, 20, 22, 25, 27 through 38, 40, 41, 46, and 48 through 50 under 35 U.S.C. § 102(b)

The Examiner maintains the rejection of claims 1, 2, 3, 5, 6, 7, 10, 13 through 17, 19, 20, 22, 25, 27 through 38, 40, 41, 46, and 48 through 50 under 35 U.S.C. § 102(b), stating that the claims

are anticipated by U.S. Patent Number 5,254,604 to Mori et al. or European Patent Application Publication Number 0269071. The applicant traverses this rejection and requests reconsideration.

The applicant relies upon the arguments made in the October 2, 2002, response for this rejection. The Examiner states that the applicant's response is not commensurate in scope with the claims. The applicant amends claims 1, 2, 6, 10, 14, 20, 22, and 47 and cancels claims 15, 31, and 39 to overcome this rejection.

The applicant notes that the Examiner has not rejected claims 4, 8, 9, 11, 12, 18, 26, 39 (currently canceled), 42 through 45, and 47 over prior art. The applicant assumes that these claims are now in allowable form.

9. Conclusion

The application is believed to be in condition for allowance. Favorable consideration is respectfully requested.

Respectfully submitted,

Paul Smith Reg. No. 30,754

for

William O. Gray, III
Registration No. 30,944
OSTROLENK, FABER, GERB & SOFFEN, LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700

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APPENDIX A
"CLEAN" VERSION OF EACH PARAGRAPH/SECTION/CLAIM
37 C.F.R. § 1.121(b)(ii) AND (c)(i)

CLAIMS (with indication of amended ~~or new~~):

Please cancel claims 15, 31, and 39 without prejudice.

Please amend claims 1, 2, 6, 10, 14, 20, 22, and 47 as follows.

1. (Amended Two Times) Method for the production of moulded bodies of a polyurethane material where

(a) a mixture of starting components is prepared which contains, on one hand isocyanate and on the other hand unsaturated monomers with reactive double bonds and containing hydroxyl groups to an extent allowing for crosslinking of the starting components by a polyaddition reaction, and where the monomers containing hydroxyl groups are used in a stoichiometric ratio or in less than the stoichiometric amount relative to isocyanate; and

(b) the mixture is subjected to a polyaddition reaction that is not triggered by radicals and that is generating a crosslinked, flexible, radical-polymerisable polyurethane preform having a content of nonextractable, reactive double bonds -- as determined by DSC - of at least 0.5 mmole/g and is free of extractable monomers with reactive double bonds;

wherein at least one of the starting components is trifunctional or polyfunctional and wherein the mixture before or during the polyaddition reaction is subjected to a shaping step and the resulting flexible preform is cured to a structurally rigid moulded body by radical-triggered polymerisation of the reactive double bonds.

C1

2. (Amended Two Times) Method according to claim 1, wherein the mixture of starting components contains isocyanate and (meth)acrylate containing hydroxyl groups in a ratio of about 1 : 1 between the OH and NCO groups.

6. (Amended Three Times) Method according to claim 1, characterised in that curing of the preform occurs by radical polymerisation of the free double bonds while applying at least one measure selected from the group consisting of elevated pressure, elevated temperature, irradiation with microwaves, irradiation with blue light, irradiation with UV light, and ionizing radiation.

C2

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C3

10. (Amended Three Times) Method according to claim 5, characterised in that the filler is added in a concentration of at most 80 % by weight of the total weight of the polyurethane material.

C4

14. (Amended Two Times) Moulded body obtained from a flexible preform having a crosslinked polyurethane matrix resulting from a polyaddition reaction of isocyanate and monomers as starting components where the monomers have reactive double bonds and contain hydroxyl groups to an extent allowing for crosslinking of the starting components by polyaddition, at least one of the starting components being trifuntional or polyfuntional, and, where the monomers containing hydroxyl groups are present in a stoichiometric or substoichiometric ratio relative to the isocyanate and the preform has a content of nonextractable, reactive double bonds – as determined by DSC – of at least 0.5 mmole/g and is free of extractable monomers with reactive double bonds, wherein the moulded body is present in the form of a structurally rigid object or formed part cured by radical polymerisation of the reactive double bonds of the preform.

C5

20. (Amended Two Times) Method for the production of structurally rigid objects or formed parts made of a polyurethane material, comprising

(a) providing a flexible preform having a crosslinked polyurethane matrix produced by a polyaddition reaction from isocyanate and monomers as starting components, which monomers have reactive double bonds and contain hydroxyl groups to an extent allowing for crosslinking of the starting components by polyaddition, at least one of the starting components being trifunctional or polyfunctional which preform has a content of nonextractable, reactive double bonds – as determined by DSC – of at least 0.5 mmole/g and is free of extractable monomers having reactive double bonds, and

(b) curing the preform via radical polymerisation until a structurally rigid object or formed part is obtained.

22. (Amended Three Times) Method according to claim 20, wherein the structurally rigid objects or formed parts are selected from the group consisting of toys, utensils, art objects, decorative objects and elements for technical purposes in civil engineering and mechanical design comprising pipe connections, ways, borders, sheathing, mounting supports, sound, heat and electrical insulations, structural elements, components, casts of objects, moulds, optical wave guides, tool components, covers, and protective films.

C6

47. (Amended) Method according to claim 5, wherein the fibre material is selected from the group consisting of glass fibres, carbon fibres, aramide fibres, cellulose fibres, polyethylene fibres.

C7

APPENDIX B
VERSION WITH MARKINGS TO SHOW CHANGES MADE
37 C.F.R. § 1.121(b)(iii) AND (c)(ii)

CLAIMS:

Please cancel claims 15, 31, and 39 without prejudice.

Please amend claims 1, 2, 6, 10, 14, 20, 22, and 47 as follows.

1. (Amended Two Times) Method for the production of moulded bodies of a polyurethane material where

(a) a mixture of starting components is prepared which contains, on one hand isocyanate and on the other hand unsaturated monomers with reactive double bonds and containing hydroxyl groups to an extent allowing for crosslinking of the starting components by a polyaddition reaction, and where the monomers containing hydroxyl groups are used in a stoichiometric ratio or in less than the stoichiometric amount relative to isocyanate; and

(b) the mixture is subjected to a polyaddition reaction that is not triggered by radicals and that is generating a crosslinked, flexible, radical-polymerisable polyurethane preform having a content of nonextractable, reactive double bonds -- as determined by DSC - of at least 0.5 mmole/g and is free of extractable monomers with reactive double bonds;

[characterised in that] wherein at least one of the starting components is trifunctional or polyfunctional and wherein the mixture before or during the polyaddition reaction is subjected to a shaping step and the resulting flexible preform is cured to a structurally rigid moulded body by radical-triggered polymerisation of the reactive double bonds.

2. (Amended Two Times) Method according to claim 1, [characterised in that] wherein the mixture of starting components contains isocyanate and (meth)acrylate containing hydroxyl groups in a ratio of about 1 : 1 between the OH and NCO groups[, and that at least one of the starting components is bifunctional or polyfunctional].

6. (Amended Three Times) Method according to claim 1, characterised in that curing of the preform occurs by radical polymerisation of the free double bonds while applying at least one measure selected from the group consisting of elevated pressure, elevated temperature, irradiation

with microwaves, irradiation with blue light, irradiation with UV light, and [high-level] ionizing radiation.

10. (Amended Three Times) Method according to claim 5, characterised in that the filler is added in a concentration of at most 80 % by weight of the total weight of the [polyurethance] polyurethane material.

14. (Amended Two Times) Moulded body obtained from a flexible preform having a crosslinked polyurethane matrix resulting from a polyaddition reaction of isocyanate and monomers as starting components where the monomers [with] have reactive double bonds and [containing] contain hydroxyl groups to an extent allowing for crosslinking of the starting components by polyaddition, at least one of the starting components being trifuntional or polyfuntional, and, where the monomers containing hydroxyl groups are present in a stoichiometric or substoichiometric ratio relative to the isocyanate and the preform has a content of nonextractable, reactive double bonds – as determined by DSC – of at least 0.5 mmole/g and is free of extractable monomers with reactive double bonds, [characterised in that] wherein the moulded body is present in the form of a structurally rigid object or formed part cured by radical polymerisation of the reactive double bonds of the preform.

20. (Amended Two Times) Method for the production of structurally rigid objects or formed parts made of a polyurethane material, comprising

(a) providing a flexible preform having a crosslinked polyurethane matrix produced by a polyaddition reaction from isocyanate and monomers as starting components, [that] which monomers have reactive double bonds and [that] contain hydroxyl groups to an extent allowing for crosslinking of the starting components by polyaddition, at least one of the starting components being trifunctional or polyfunctional which preform has a content of nonextractable, reactive double bonds – as determined by DSC – of at least 0.5 mmole/g and is free of extractable monomers having reactive double bonds, and

(b) curing the preform via radical polymerisation until a structurally rigid object or formed part is obtained.

22. (Amended Three Times) Method according to claim 20, wherein the structurally rigid objects or formed parts are selected from the group consisting of [elements for technical applications,] toys, utensils, art objects, [and] decorative objects and elements for technical purposes in civil engineering and mechanical design comprising pipe connections, ways, borders, sheathing, mounting supports, sound, heat and electrical insulations, structural elements, components, casts of objects, moulds, optical wave guides, tool components, covers, and protective films.

47. (Amended) Method according to claim 5, wherein the fibre material is selected from the group consisting of glass fibres, carbon fibres, aramide fibres, cellulose fibres, polyethylene fibres[, and other plastic fibres].